
5.8 Air Quality

Clean air is important to a community's wellbeing and the environment. Pollutants in the air can have negative effects on human health and cause harm to animals, plants, and materials. Emissions from cars, trucks, and buses are a major factor affecting air quality, particularly in urban areas. Maintaining good air quality will be important to freeway users, neighbors, and the community at large.

How did we evaluate air quality for the Renton to Bellevue Project?

Regionally, the Puget Sound Regional Council evaluated the Renton to Bellevue Project as part of the I-405 Corridor Program in 2002. Air quality modeling results conducted at that time show that the Puget Sound Region, after making the corridor-wide improvements, will be in compliance with the Clean Air Act. However, some pollutants, such as carbon monoxide (CO), can have localized areas of high concentrations or “hot spots” under stable atmospheric conditions at locations where vehicles are stopped and idling, such as intersections. Therefore, WSDOT only evaluated how the Renton to Bellevue project improvements will affect air quality at specific locations (potential hot spots).

In our evaluation, we modeled two future years: 2014 and 2030. We selected the year 2014 (the year the project is scheduled for completion) to determine the project’s effects on air quality when first completed; and the year 2030, to show the project’s long-term effects.

What air quality issues affect the project area?

Under the federal Clean Air Act, the proposed Renton to Bellevue Project must be in compliance with National Ambient Air Quality Standards (NAAQS).



Mount Rainier, looking toward the project

Please refer to the Renton to Bellevue Project Air Quality Discipline Report in Appendix S (on CD) for a complete discussion of the air quality analysis.

DID YOU KNOW?

The **Clean Air Act of 1970**, 42 USC 7401 et seq., was enacted to protect and enhance air quality and to assist state and local governments with air pollution prevention programs. Under the **Clean Air Act Amendments of 1990**, USDOT cannot fund, authorize, or approve federal actions to support programs or projects that are not first found to conform to Clean Air Act requirements.

DID YOU KNOW?

Under the federal Clean Air Act, the U.S. Environmental Protection Agency (EPA) has set **National Ambient Air Quality Standards** (NAAQS) that specify maximum concentrations for specific pollutants. Transportation projects must conform to the NAAQS by demonstrating that:

- the proposed project will not cause or contribute to any new violation of NAAQS;
- the project will not increase the frequency or severity of any existing violation of any NAAQS;
- the project will not delay timely attainment of the NAAQS within the region; and
- the project must not increase a CO reading in the design year (2030) over the CO reading in the existing year.

In addition to federal requirements, the Renton to Bellevue Project must conform to Air Quality Maintenance Plans (AQMPs) for ozone and CO that have been established for the Puget Sound Region.

Although the I-405 Corridor currently meets all NAAQS, vehicle emissions from heavy traffic congestion generates several air pollutants that are a concern in the project area — oxides of nitrogen (NO_x), CO, particulate matter (PM₁₀)¹, ozone, hazardous air pollutants, and greenhouse gases, primarily carbon dioxide (CO₂). CO is the major pollutant of concern from combustion engines and can be readily modeled. CO impacts were modeled at several intersections because CO is the most closely tied pollutant to transportation and because it is an indicator for other pollutants.

NO_x and hydrocarbons contribute to ozone formation on a regional scale. Ozone, a component of smog, is an irritant, reduces lung function, and can damage plants and materials. CO is a colorless, odorless, and poisonous gas generated by automobiles that reduces the oxygen-carrying capability of the blood. The small particles can be inhaled deeply into the lungs, potentially leading to respiratory diseases. PM₁₀ is an important concern during construction. Hazardous air pollutants, including a component of gasoline called benzene, may reasonably be expected to cause or contribute to irreversible illness or death. Automobiles and other vehicles using fossil fuel emit greenhouse gases, primarily CO₂ that trap solar energy in the atmosphere and warm the earth's surface.

How will construction affect air quality?

The Renton to Bellevue Project will cause localized and temporary air quality impacts. Typically, construction activities associated with roadway projects temporarily generate particulate matter (mostly dust), odors, and small amounts of other pollutants. Particulate emissions vary from day to day, depending on the level of activity, specific operations, and weather conditions. Thus, the quantity of particulate emissions during the project will be proportional to the area of the construction operations and the level of activity. Fugitive dust from construction activities will be noticeable near construction sites if uncontrolled.

Emissions during construction activities will be temporary, limited to the immediate area surrounding the construction

¹ This refers to particles less than 10 micrometers in size; it includes small dust particles and diesel particulate.

site, and will contribute only a small amount to the total emissions in the project area.

How will air quality change once the project is built?

Based on the results of modeling, WSDOT concluded that the Renton to Bellevue Project will not substantially affect CO concentrations in the project area.

WSDOT studied air quality at the three intersections with the highest traffic volumes and the most congestion (Exhibit 5.8-1). The modeled intersections include the intersections identified as being most likely to exceed the NAAQS for CO in the future with the Build Alternative. We used these intersections to model worst-case CO levels under existing conditions, as well as future conditions projected for both the proposed Build and the No Build alternatives.

Traffic volumes and congestion at ramp intersections will be slightly higher with the Build Alternative; therefore, our analysts modeled CO concentrations for some of the intersections at slightly higher traffic volumes with the Build Alternative than for the No Build Alternative (Exhibits 5.8-2 and 5.8-3). No exceedances of the NAAQS for CO are predicted at any of the three intersections and the project is not expected to have a substantial negative effect on localized CO levels.

What measures are proposed to avoid or minimize effects to air quality during construction?

The construction contractor will be contractually obligated to control fugitive dust in accordance with the Memorandum of Agreement between WSDOT and Puget Sound Clean Air Agency Regarding Control of Fugitive Dust from Construction Projects (October 1999).

The following measures will be used to control dispersion of dust (PM₁₀), transmission of particulate matter, and emissions of CO and NO_x during construction:

- WSDOT will spray exposed soil with water to reduce emissions of PM₁₀ and deposition of particulate matter.



Grading to finish roadway subgrade

- WSDOT will cover truckloads of material susceptible to scattering by the wind, and materials in trucks will be wetted or provided adequate freeboard (space from the top of the material to the top of the truck) to reduce PM₁₀ and deposition of particulates during transport.
- Wheel washers, rock aprons, or other measures will be provided to remove particulate matter that would otherwise be carried off site by vehicles to decrease deposition of particulate matter on area roadways.
- Dust deposited on public roads will be removed to reduce mud on area roadways.
- Dirt, gravel, and debris piles will be covered or wetted during periods of high wind when the stockpiles are not in use.
- Construction trucks will be routed and scheduled to reduce travel delays and unnecessary fuel consumption/emissions.

Exhibit 5.8-1: Intersections studied for air quality

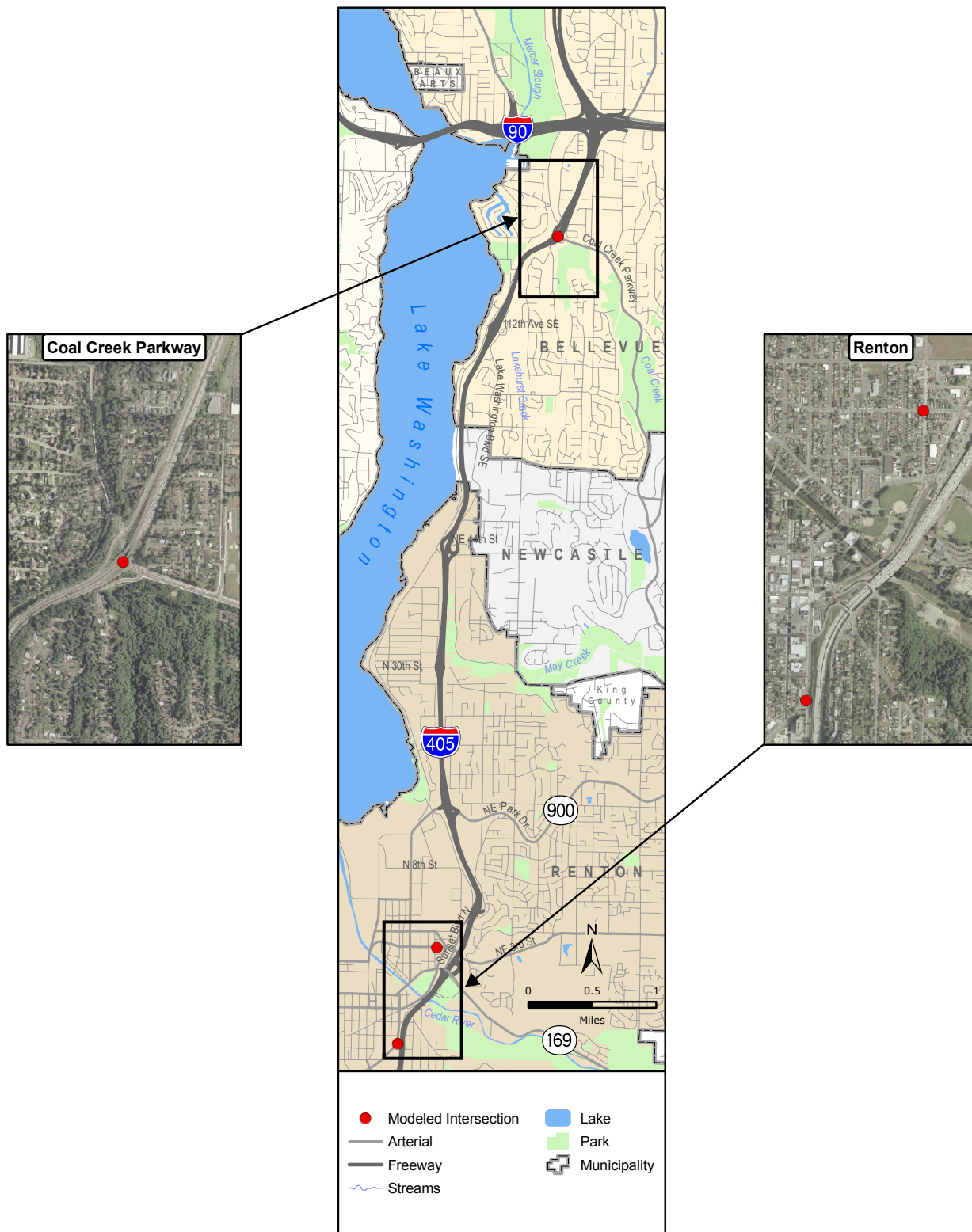


Exhibit 5.8-2: One-hour average CO concentrations

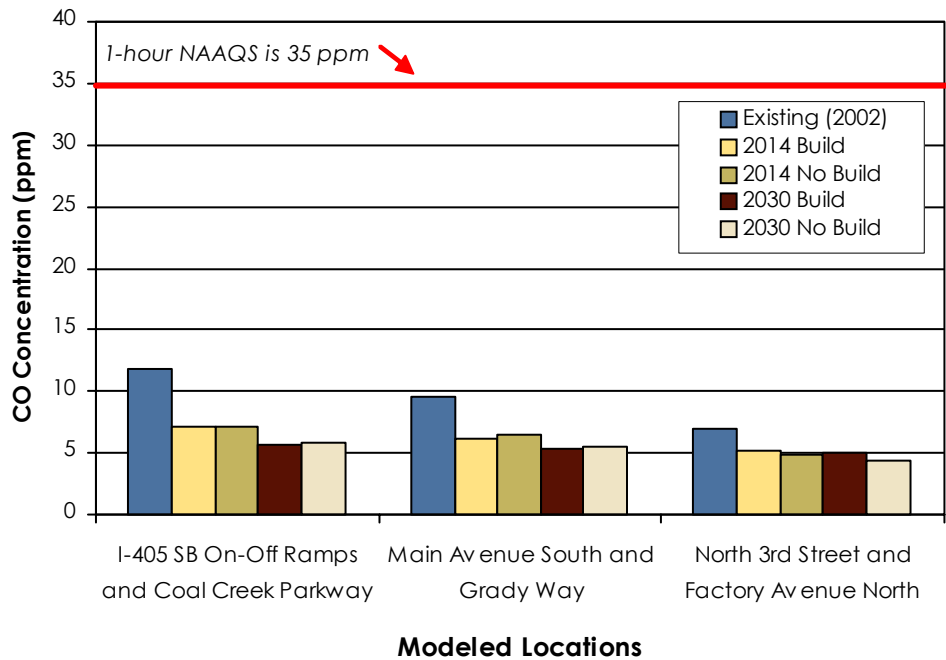


Exhibit 5.8-3: Eight-hour average CO concentrations

